

Amendments to the Claims:

Please cancel Claims 1-13, 18-28, 30, 33, 34, 36, and 37 and amend Claims 14-17 29, 35, and 38 as follows:

Claims 1-13 (canceled).

14. (currently amended) A logic network ~~according to Claim 13~~ for computing the reciprocal of a number M in a non-iterative manner comprising logical devices configured to calculate an algebraic function that is a relationship of at least two numbers X and A that sum to equal the number M, wherein said logic network operates independent of a clock signal, wherein said logic network has logical devices configured to calculate the algebraic function:

$$1/M = 1/X - A/(X^2 + AX).$$

15. (currently amended) A logic network ~~according to Claim 13~~ for computing the reciprocal of a number M in a non-iterative manner comprising logical devices configured to calculate an algebraic function that is a relationship of at least two numbers X and A that sum to equal the number M, wherein said logic network operates independent of a clock signal, wherein said logic network has logical devices configured to calculate the algebraic function that approximates the reciprocal of number M to a predetermined accuracy, said algebraic function being:

$$1/M \approx ((X-A)^2 + AX)/X^3 \quad \text{for } A < X.$$

16. (currently amended) A logic network according to Claim ~~14~~ 13, wherein said logic network is derived by universal approximators.

17. (currently amended) A logic network according to Claim ~~14~~ 13, wherein said logic network includes storage devices for storing all possible values for at least some

portions of the algebraic function, such that the stored values can be addressed and used in computing the reciprocal of the number M.

Claims 18-28. (canceled).

29. (currently amended) A method ~~according to Claim 28~~, of computing the reciprocal of a number M in a non-iterative manner comprising the steps of:
providing a logic network comprising logical devices for determining the reciprocal of number M, wherein the logical devices are configured to calculate an algebraic function that is a relationship of at least two numbers X and A that sum to equal the number M, wherein said logic network operates independent of a clock signal;
applying the number M to the logic network; and
acquiring the reciprocal of the number M from an output of the logic network,
wherein said providing step provides a logic network having logical devices configured to calculate the algebraic function:

$$1/M = 1/X - A/(X^2 + AX).$$

30. (canceled).

31. (original) A method of computing the reciprocal of a number M in a non-iterative manner comprising the steps of:

providing a logic network that operates independent of a clock signal and comprising logical devices for determining the reciprocal of number M, wherein the logical devices are configured to calculate an algebraic function that is a relationship of at least two numbers X and A that sum to equal the number M, said algebraic function approximating the reciprocal of number M to a predetermined accuracy and being:

$$1/M = 1/X - A/(X^2 + AX)$$

simplified using the approximation

$$1/(X+A) \approx (X-A)/X^2 \text{ for } A < X;$$

applying the number M to the logic network; and
acquiring the reciprocal of the number M from an output of the logic network.

32. (original) A method according to Claim 31 further comprising the step of multiplying the number M as a divisor to a dividend to determine a quotient.

Claims 33-34. (canceled).

35. (currently amended) A computer program product ~~according to Claim 33~~ for computing a reciprocal of a number M, wherein the computer program product comprises:

a computer readable storage medium having computer readable program code means embodied in said medium, said computer-readable program code means comprising:

first computer instruction means for separating number M into at least two numbers X and A so that number M equals the sum of the at least two numbers X and A;

second computer instruction means for generating an algebraic function relating the at least two numbers X and A to the reciprocal of number M; and

third computer instruction means for computing the reciprocal of number M according to the algebraic function,

wherein said second computer instruction means generates the algebraic function of:

$$1/M = 1/X - A/(X^2 + AX).$$

Claims 36-37. (canceled).

38. (currently amended) A computer program product ~~according to Claim 33 for~~
computing a reciprocal of a number M, wherein the computer program product
comprises:

a computer readable storage medium having computer readable program code
means embodied in said medium, said computer-readable program code means
comprising:

first computer instruction means for separating number M into at least two
numbers X and A so that number M equals the sum of the at least two numbers X
and A;

second computer instruction means for generating an algebraic function
relating the at least two numbers X and A to the reciprocal of number M; and

third computer instruction means for computing the reciprocal of number M
according to the algebraic function,

wherein said second computer instruction means generates the algebraic
function that approximates the reciprocal of number M to a predetermined
accuracy,

wherein said second computer instruction means generates the algebraic
function based on the requirement that one of the at least two numbers X and A, is
much smaller than the other of the at least two numbers